

Application No. 09/126,897
Amendment filed February 20, 2004
Reply to Office Action dated October 20, 2003

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Remarks

Claims 28-45 are pending, with claims 28, 30, 32, 36, 40, 43 and 44 being in independent form.

In the Office Action, claims 28-45 stand rejected for obviousness over newly cited U.S. Patent No. 5,966,376 to Rakib et al ("Rakib") and U.S. Patent No. 5,533,012 to Fukasawa et al. ("Fukasawa"). Each of these rejections is respectively traversed.

In accordance with the MPEP, three criteria must be met to establish a prima facie case of obviousness. First, the cited documents must teach or suggest all of the claim limitations. Second, there must be some suggestion or motivation, either in the cited documents themselves or in the knowledge generally available to one of ordinary skill in the art, to have combined the teachings of the cited documents. Third, there must have been a reasonable expectation that the documents could have been successfully combined.

The rejections cannot stand at least because no combination of the cited documents teaches all of the claim limitations. Moreover, the cited documents would not have supplied any motivation to combine them as suggested by the Action. Finally, there would have been no reasonable expectation that such complex documents could have been successfully combined to yield a working system, which even then would have had to be further modified to obtain the claimed subject matter.

Claim 28 defines a method of transferring an electrical digital signal from a first terminal on an optical fiber to a second terminal, the electrical digital signal incoming to the first terminal. The steps are sequential and include spreading the electrical digital signal using a spread spectrum method to produce a spread electrical signal and modulating the spread electrical signal on a subcarrier of a radio frequency to produce a modulated electrical signal of a first frequency range around the radio frequency of the subcarrier. Next, a control digital signal of a second frequency range comprising control information is added to the modulated electrical signal to provide a sum signal, where frequencies of the first frequency range are higher than frequencies of the second frequency range. The sum signal is then converted to an optical signal, which is transmitted on the optical fiber to the second

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terminal, where inverse operations are performed on the received optical signal to provide signals corresponding to the electrical digital signal and to the control digital signal.

Adding the control signal at a different frequency prior to transmission, but after the electrical signal is spread and modulated, simplifies the extraction of the control signal at the receiver using a splitting filter as shown, for example, in Fig. 4b of the specification.

The Examiner admits that "Rakib does not disclose the step of adding a control signal to the modulated signal," but contends that Fukasawa does, or that such is well known in the art (Action, p.3). First, Applicants disagree with the Examiner and assert that Fukasawa does not disclose or suggest the step of adding a control signal to the modulated signal as defined by the invention, as detailed further below.

Second, Applicants respectfully traverse the assertion of well-known prior art and request that the Examiner cite any additional references to support the assertion that adding a control signal as defined in the claimed invention is well-known in the art so that the true content of the prior art can be properly evaluated within the context of the field of the claimed invention. Since the Examiner has offered only Fukasawa, only Fukasawa can be addressed here.

Fukasawa does not disclose or suggest a control digital signal of a second frequency range comprising control information being added to the modulated electrical signal to provide a sum signal, where frequencies of the first frequency range are higher than frequencies of the second frequency range. In contrast, Fukasawa teaches away from this prospect, stating that "the control spreading-code generator 604 generates a control spreading code $p(t)$ that has the same chip rate as the downstream spreading codes" (col. 20, ll. 55-58). As is known in the art, in spread spectrum technologies such as CDMA, the chip rate is the number of bits per second (chips per second) used in the spreading signal, which translates to the frequency. Therefore, since the chip rate must be the same in Fukasawa, the control signal is not at a lower frequency range, as defined by claim 28.

Moreover, as is evident from Fig. 13, which is the structure of the third embodiment's spreading modulator (cited by the Examiner), Fukasawa does not

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disclose or suggest adding a control signal to an already modulated signal. Instead, the control signal is added to an unmodulated signal and both the baseband signal and the control signal are modulated together, after the control signal is added (see product modulator 607 and control spreading code generator 604). In contrast, in claim 28, the control signal is added to an already modulated electrical signal.

Furthermore, in contrast to Fukasawa, the control signal of claim 28 is not modulated at all prior to being converted to an optical signal. Fukasawa, however, discloses modulating the baseband signal and the control signal together in a product modulator 607.

Still further, since the combination of Rakib and Fukasawa fails to disclose or suggest all the steps leading up to the transmission of the optical signal in claim 28 as described above, the combination also fails to disclose or suggest the inverse steps defined by claim 28. Also, it would not be possible to use the simplified control signal extraction method described by applicants.

In addition, the combination of Rakib and Fukasawa fails to disclose or suggest all the limitations of independent claims 28, 30, 32, 36, 40, 43 and 44 for analogous reasons.

Accordingly, since the combination of Rakib and Fukasawa fails to disclose or suggest all of the claim limitations for at least the above reasons, the obviousness rejections of all the claims should be withdrawn.

The second requirement of a prima facie case of obviousness is also missing here. One of ordinary skill in the art would have had no motivation to combine Rakib and Fukasawa at least because the problems that Rakib and Fukasawa aim to solve are different. Fukasawa is only concerned with radio or wireless transmission, and in particular canceling interference occurring in the upstream channel of a CDMA mobile communication system (col. 2, ll. 3-5). Rakib, on the other hand, is concerned with bidirectional communication of digital data over coaxial cable or other transmission media, and in particular providing multiple channels for interactive TV services, digital telephony, video on demand, etc. (col. 1, ll. 13-22). Fukasawa is not subject to the problems encountered using a non-wireless transmission medium, which is the problem Rakib was trying to solve, and thus it is hard to understand why one knowing Rakib would have been motivated to look to Fukasawa for anything.

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Moreover, the Action's suggestion that the documents can be combined ignores the great technical differences between Rakib and Fukasawa that would have made such a combination improbable to say the least.

It is respectfully submitted that the suggestion to combine such disparate documents, with no indication of any motivation for the combination of the documents themselves, may reflect a use of Applicant's claims as mere templates for picking isolated features from the art. Such hindsight reconstruction is improper. E.g., *Sensonics, Inc. v. Aerosonic Corp.*, 38 U.S.P.Q.2d 1551 (Fed. Cir. 1996); *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992) (reversing an obviousness rejection and stating the "reason, suggestion, or motivation" to combine (or modify) prior art "can not come from the applicant's invention itself. [Citation omitted.]").

Since there would have been no motivation to combine Rakib and Fukasawa as suggested in the Action, the second requirement of a prima facie case of obviousness is missing, and the obviousness rejections of the claims should be withdrawn for this reason, too.

The third requirement of a prima facie case is also missing. Even if one had attempted to combine the disclosures of the cited documents, one would have been more likely to arrive at something that did not work at all or not in the manner claimed by the present application. As discussed above, one of ordinary skill in the art would have known that the features of Rakib and Fukasawa cannot be combined without further modification to reach the subject matter defined by the claims. The control signal would, at a minimum, have to be added after modulation of the baseband signal and using a lower frequency, i.e., chip rate, which would certainly render the combination inoperable. Fukasawa explicitly states that the chip rates are the same. That is because combining signals at different chip rates using the arrangement of Fukasawa would lead to garbage as the product. In the absence of any suggestion in the cited documents of how to make such a combination operable, one would have faced a serious engineering problem that naturally would have had a low probability of success without substantial experimentation and effort, especially in view of the need to modify the teachings of the documents. It is well settled that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make that modification obvious unless the prior art suggested the

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desirability of the modification." In re Fritch, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

Accordingly, the combination of documents relied upon to support the obviousness rejection of the claims is improper and the claim rejections should therefore be reconsidered and withdrawn for this reason also.

For the foregoing reasons, Applicants consider the application to be in condition for allowance and respectfully request notice thereof at an early date. The Examiner is encouraged to telephone the undersigned at the below-listed number if, in the Examiner's opinion, such a call would aid in the examination of this application.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: 

Theodoros Thomas
Registration No. 45,159

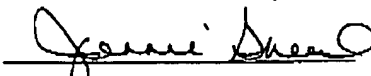
P.O. Box 1404
Alexandria, Virginia 22313-1404
(919) 941-9240

Date: February 20, 2004

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